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Porafensele Ya Kapa Botjhabela: Lefapha la Thuto

# **NATIONAL SENIOR CERTIFICATE**

## **GRADE 12**

## **JUNE 2025**

## **GEOGRAPHY**

**MARKS: 150**

**TIME: 3 hours**



★ J G E O G E ★

This question paper consists of 19 pages.



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**INSTRUCTIONS AND INFORMATION**

1. This question paper consists of TWO SECTIONS.

**SECTION A:**

QUESTION 1: CLIMATE AND WEATHER (40)

QUESTION 2: GEOMORPHOLOGY (40)

QUESTION 3: SETTLEMENTS (40)

**SECTION B:**

QUESTION 4: GEOGRAPHICAL SKILLS AND TECHNIQUES (30)

2. Answer all FOUR questions.
3. ALL diagrams are included in the QUESTION PAPER.
4. Leave a line between subsections of questions answered.
5. Start EACH question at the top of a NEW page.
6. Number the questions correctly according to the numbering system used in this question paper.
7. Do NOT write in the margins of the ANSWER BOOK.
8. Draw fully labelled diagrams when instructed to do so.
9. Answer in FULL SENTENCES, except when you have to state, name, identify or list.
10. Units of measurement MUST be indicated in your final answer, for example. 1 020 hPa, 14 °C and 45 m.
11. You may use a non-programmable calculator.
12. You may use a magnifying glass.
13. Write neatly and legibly.

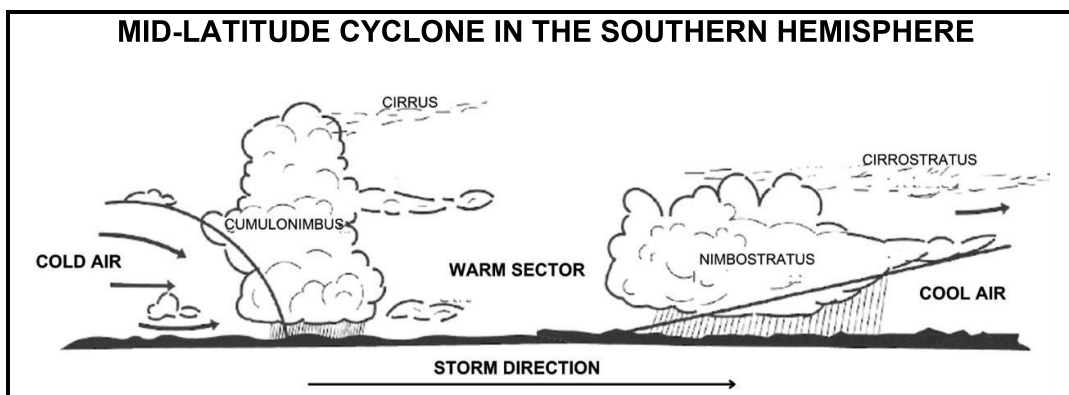
**SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B**

14. A 1 : 50 000 topographical map 2820CB AUGRABIES and a 1 : 10 000 ORTHOPHOTO MAP 2820CB 7 AUGRABIES are provided.
15. The area demarcated in RED/BLACK on the topographic map represents the area covered by the orthophoto map.
16. Show ALL calculations. Marks will be allocated for steps in calculations.
17. You must hand in the topographical and the orthophoto map to the invigilator at the end of this examination session.



**SECTION A****QUESTION 1: CLIMATE AND WEATHER**

- 1.1 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (1.1.1 to 1.1.5) in the ANSWER BOOK, for example. 1.1.6 D.



[Adapted from <http://www.bom.gov.au/climate>]

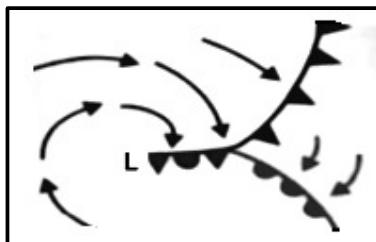
- 1.1.1 The sketch shows the ... stage of a mid-latitude cyclone.
- A initial
  - B mature
  - C occluded
  - D degenerative
- 1.1.2 ... clouds form along the cold front.
- A Nimbostratus
  - B Cirrostratus
  - C Cirrus
  - D Cumulonimbus
- 1.1.3 The cold front has a ... pressure gradient and moves ... than the warm front.
- (i) steeper
  - (ii) gentler
  - (iii) slower
  - (iv) faster
- A (i) and (iii)
  - B (ii) and (iii)
  - C (i) and (iv)
  - D (ii) and (iv)



1.1.4 The warm sector causes air pressure to ... and humidity to ...

- A decrease; decrease.
- B increase; increase.
- C decrease; increase.
- D increase; decrease.

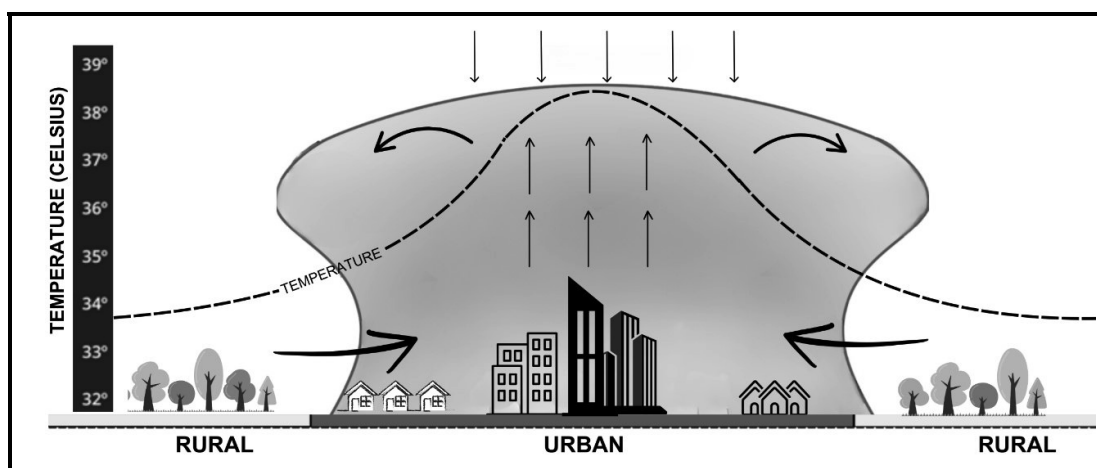
1.1.5 The sketch below shows an occlusion that formed because ...



- A the cold air was uplifted along the warm front.
- B the warm air was uplifted along the cold front.
- C the warm front undercut the cold front.
- D the warm air was uplifted along the warm front.

(5 x 1) (5)

1.2 The sketch below shows the local climate of an urban area. Select the correct option between brackets so that each statement reads correctly.



[Adapted from <https://www.carbonbrief.org/rural-buffer-ring>]

1.2.1 The air pressure will generally be (higher/lower) in the urban area than in the rural areas.

1.2.2 The temperature difference between the city centre and the rural area is approximately (34°C/5°C).

1.2.3 The sketch shows typical (day/night) time conditions.

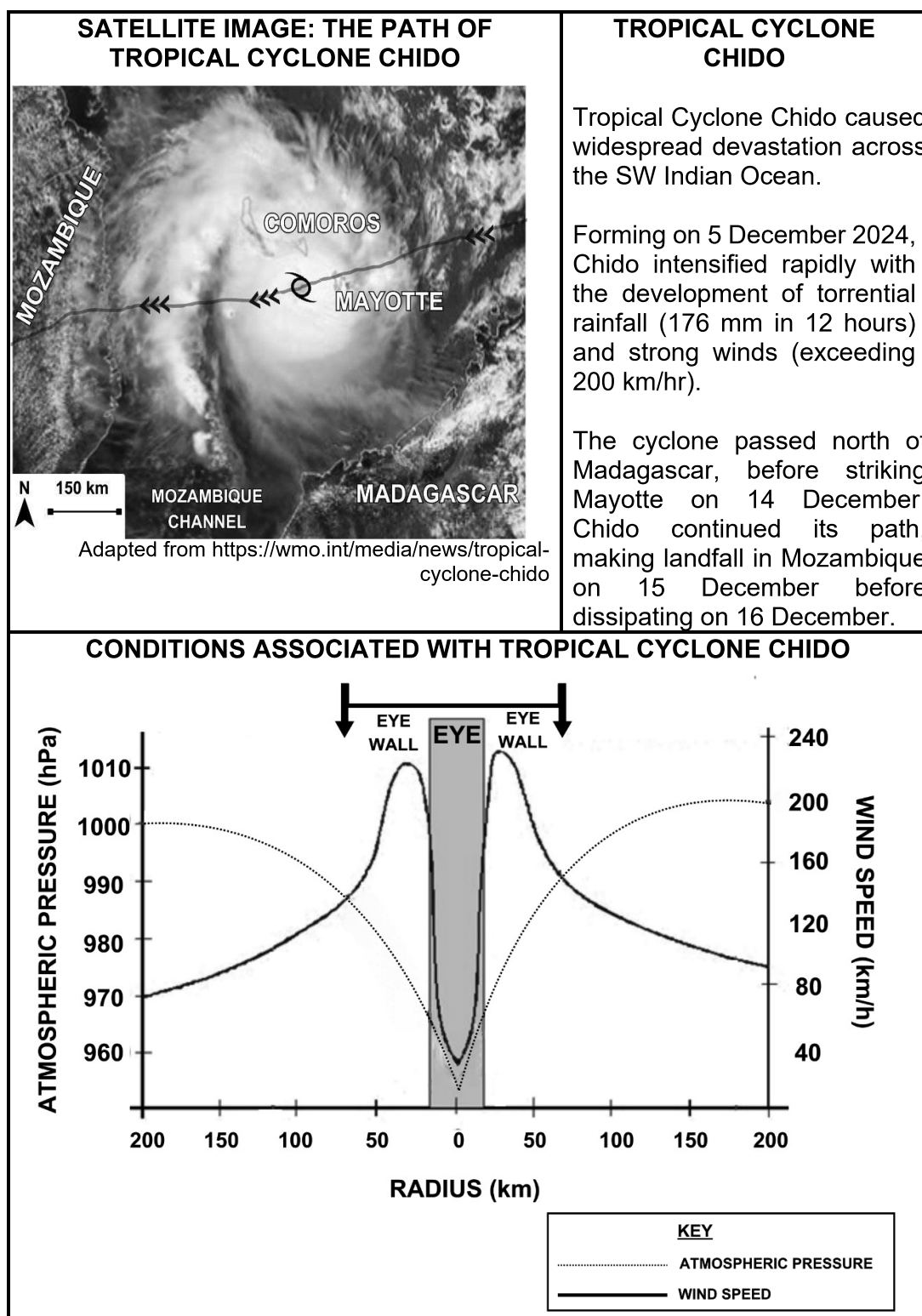
1.2.4 (Cool/Warm) air moves in from the rural area to replace the rising air.

1.2.5 The great vertical dimension of the heat island shape is influenced by the strong (subsiding/rising) air.

(5 x 1) (5)



1.3 Refer to the infographic on Tropical Cyclone Chido.

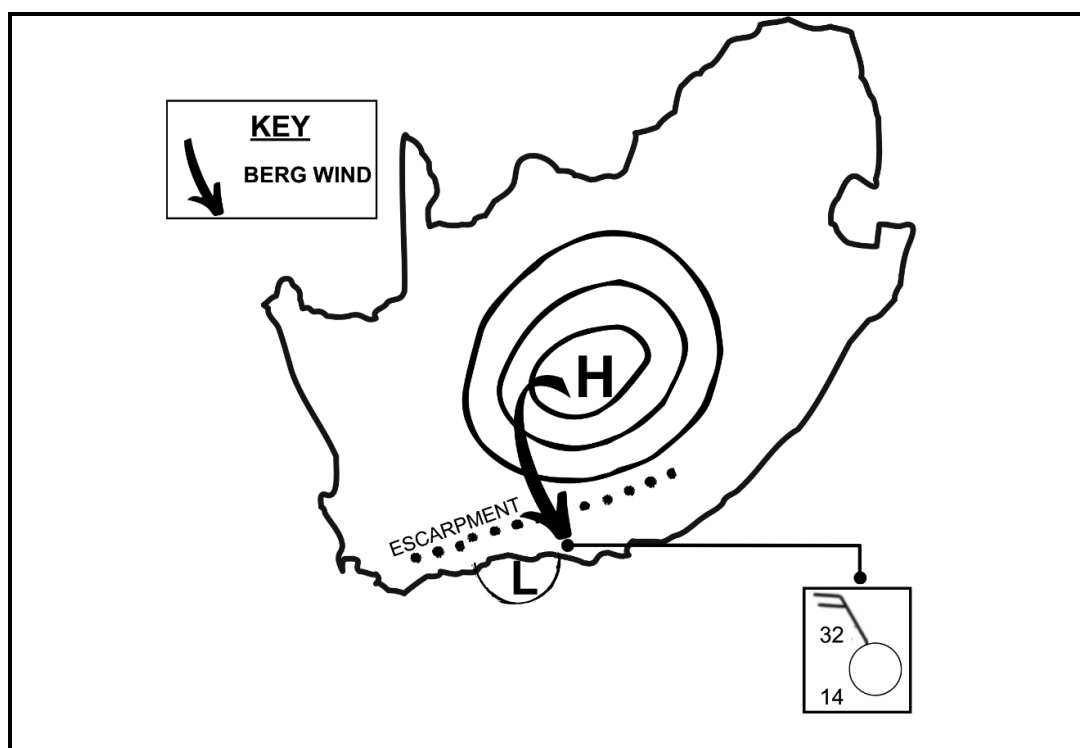


[Adapted from <https://www.imperial.ac.uk/grantham/research/climate/>]





- 1.3.1 According to the extract, over which ocean did Tropical Cyclone Chido develop? (1 x 1) (1)
- 1.3.2 During which season did Tropical Cyclone Chido develop? (1 x 1) (1)
- 1.3.3 Calculate the life span (duration) of Tropical Cyclone Chido. (1 x 1) (1)
- 1.3.4 Refer to the satellite image and explain the reason for the direction of Tropical Cyclone Chido's path. (1 x 2) (2)
- 1.3.5 Refer to the graph and state why the eye of the tropical cyclone is calm and clear. (2 x 2) (4)
- 1.3.6 Explain how the moisture content and high temperatures over the ocean contribute to the formation of heavy rain in the eye walls. (3 x 2) (6)
- 1.4 Refer to the sketch below showing a South African berg wind.



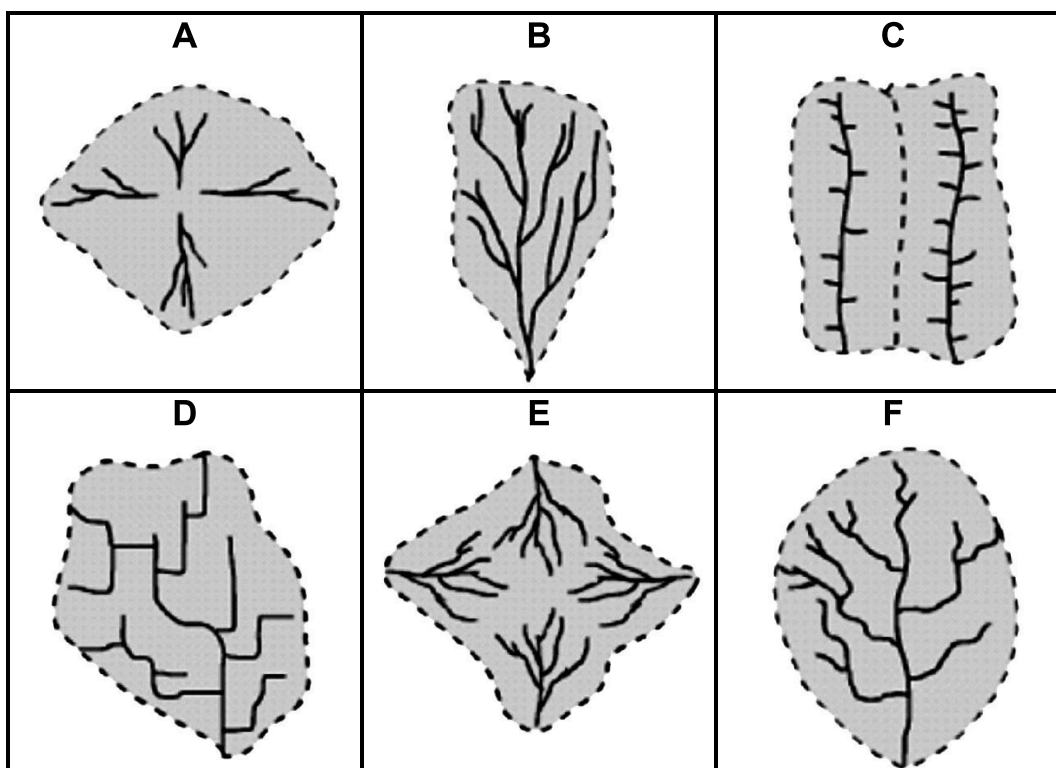
[Source: Examiner's Own Sketch]

- 1.4.1 Why is the coastal low referred to as a travelling disturbance? (1 x 2) (2)
- 1.4.2 Refer to the station model. What is the maximum temperature? (1 x 1) (1)
- 1.4.3 What causes the berg wind to be a warm offshore wind? (2 x 2) (4)
- 1.4.4 In a paragraph of approximately EIGHT lines, explain the negative physical impact of berg winds on farmers in the area. (4 x 2) (8)

**[40]**

**QUESTION 2: GEOMORPHOLOGY**

- 2.1 Match each type of drainage pattern (A to F) below with the descriptions that follow. Write only the letter (A to F) of the drainage basin next to the question numbers (2.1.1 to 2.1.5) in the ANSWER BOOK, for example. 2.1.6 A.

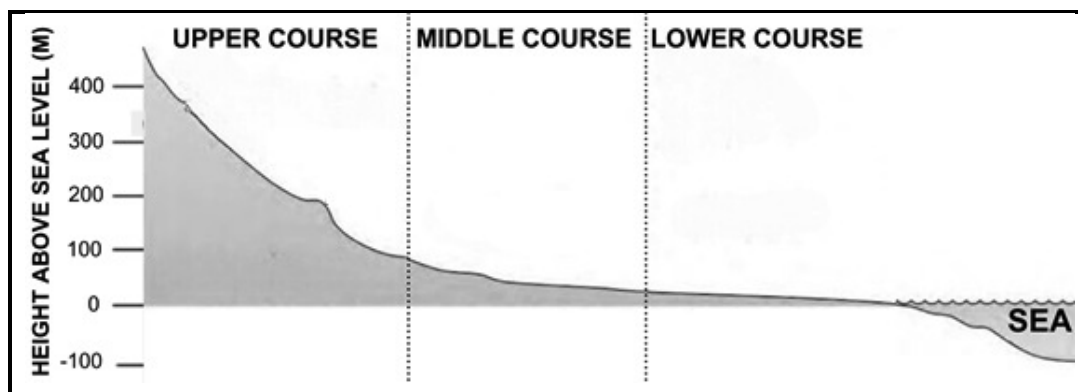


[Adapted from [www.sciencedirect.com/topics/earth-and-planetary-sciences/drainage-pattern](http://www.sciencedirect.com/topics/earth-and-planetary-sciences/drainage-pattern)]

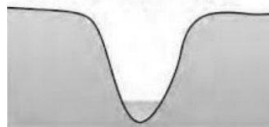
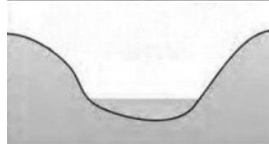
- 2.1.1 Rivers flow away in all directions from the peak which is a central elevated point like a hill or dome.
- 2.1.2 Main rivers run parallel to one another and have short tributaries that join at 90°.
- 2.1.3 Tributaries that join the main river at acute angles and which form on rock that is uniformly resistant to erosion.
- 2.1.4 Forms in highly jointed rocks where the main river and its tributaries have right-angle bends.
- 2.1.5 Rivers and tributaries flowing in roughly parallel lines on a slope with a steep gradient. (5 x 1) (5)



- 2.2 Refer to the sketch of different river profiles below. Complete the statements in COLUMN A with the options in COLUMN B. Write only **Y** or **Z** next to the question numbers (2.2.1 to 2.2.5) in the ANSWER BOOK, for example. 2.2.6 Y.



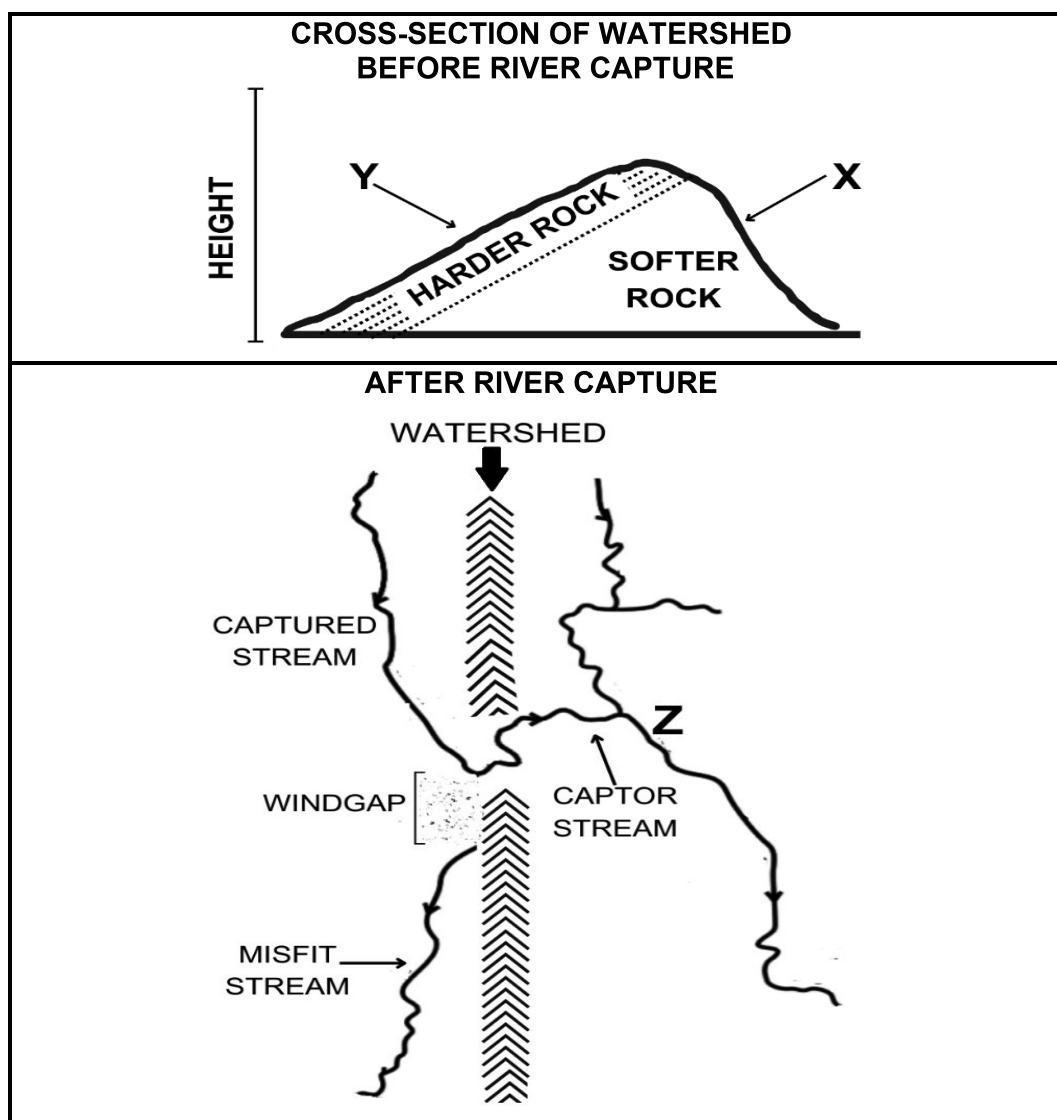
[Adapted from <https://images.app.goo.gl/RzdoDMGoskh2GYCb8>]

COLUMN A		COLUMN B	
2.2.1	Deposition is the main fluvial process in the ... course.	Y	upper
		Z	lower
2.2.2	The middle course is dominated by ... erosion.	Y	lateral
		Z	vertical
2.2.3	Fluvial landforms in the lower course.	Y	levees
		Z	rapids
2.2.4	The permanent base level of erosion is at ... metres above sea level.	Y	200
		Z	0
2.2.5	A transverse profile representing the middle course.	Y	
		Z	

(5 x 1) (5)



2.3 Refer to the sketches showing river capture.



[Adapted from [www.researchgate.net/figure/Summary-of-the-river-capture-model](http://www.researchgate.net/figure/Summary-of-the-river-capture-model)]

2.3.1 What is a *watershed*? (1 x 2) (2)

Refer to the cross-section of the watershed.

2.3.2 Would the captor stream flow on slope **X** or slope **Y**? (1 x 1) (1)

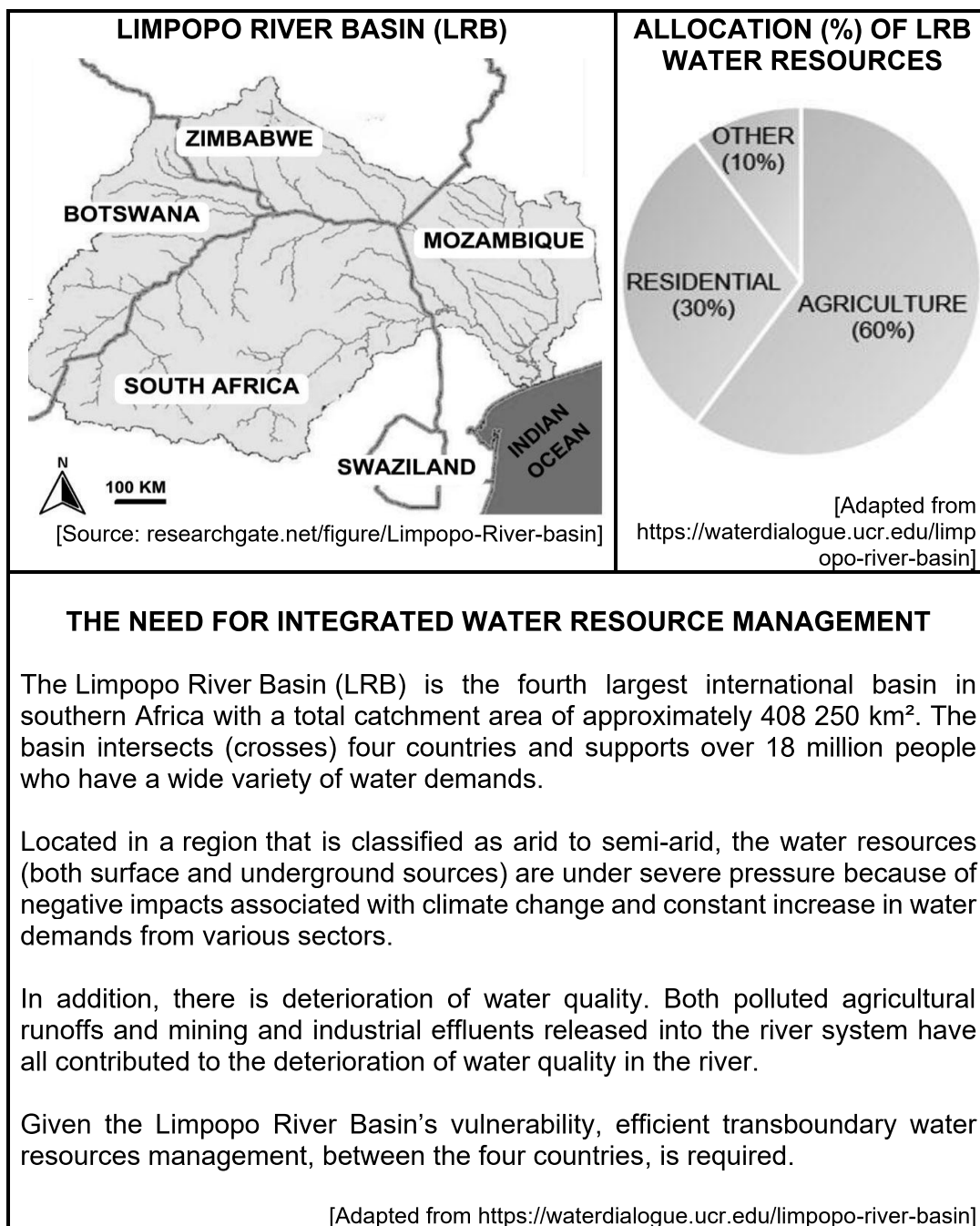
2.3.3 Give a reason for your answer to QUESTION 2.3.2. (1 x 2) (2)

Refer to the sketch showing conditions after river capture.

2.3.4 How did the misfit stream form? (1 x 2) (2)

2.3.5 In a paragraph of approximately EIGHT lines, explain how the flow characteristics, downstream of **Z**, will change after river capture. (4 x 2) (8)

- 2.4 Refer to the infographic on the Limpopo River Basin (LRB) catchment and river management.



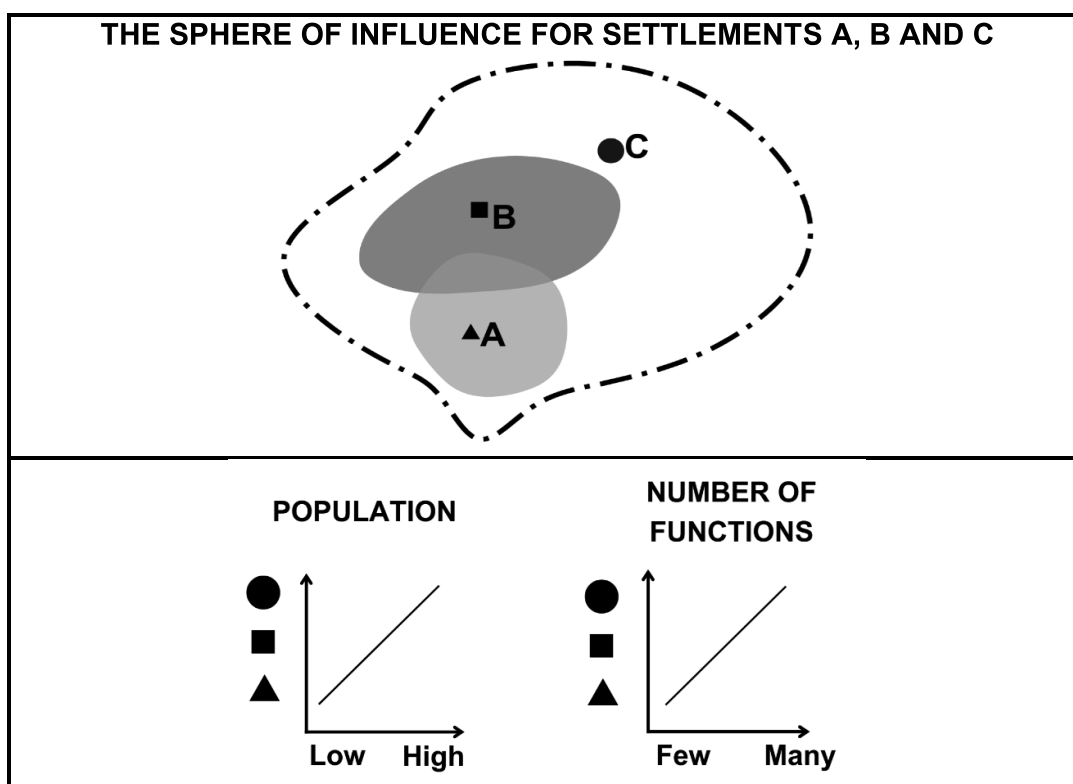
- 2.4.1 Identify TWO of South Africa's neighbouring countries that are part of the Limpopo River Basin's catchment area. (2 x 1) (2)
- 2.4.2 According to the extract, suggest ONE human and ONE physical factor that threatens the Limpopo River Basin's (LRB) water quantity. (2 x 1) (2)



- 2.4.3 What percentage of the Limpopo River Basin's (LRB) water is allocated to the agricultural sector? (1 x 1) (1)
- 2.4.4 Explain how agricultural runoff negatively impacts the water quality in the Limpopo River Basin (LRB). (2 x 2) (4)
- 2.4.5 Suggest THREE sustainable water resource management strategies that could be implemented to ensure healthy water quality is maintained in the drainage basin. (3 x 2) (6)
- [40]**

### QUESTION 3: SETTLEMENTS

- 3.1 Refer to the sketch and graphs showing various settlements. Match each description (QUESTION 3.1.1 to 3.1.5) with the correct settlement (A, B or C). Write only the letter (A, B or C) next to the question numbers (3.1.1 to 3.1.5) in the ANSWER BOOK, for example. 3.1.6 A.

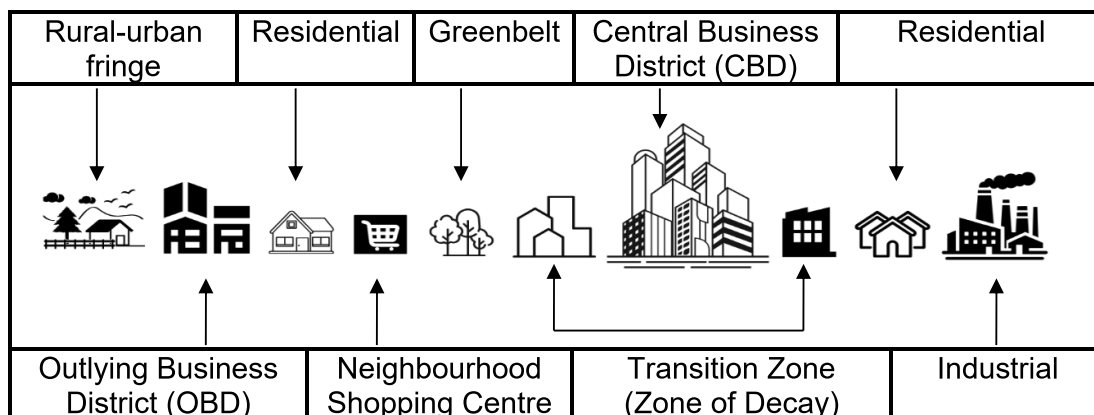


[Adapted from <https://www.researchgate.net>]

- 3.1.1 The settlement that has the largest sphere of influence.
- 3.1.2 The settlement with the smallest range.
- 3.1.3 The settlement that offers the least low-order services.
- 3.1.4 The settlement with the second smallest population.
- 3.1.5 The settlement that has the most number of high-order functions. (5 x 1) (5)



- 3.2 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (3.2.1 to 3.2.5) in the ANSWER BOOK, for example. 3.2.6 D.



[Source: Examiner's own sketch]

- 3.2.1 The urban profile shows the ... of a city.

- A street pattern
- B population density
- C side view
- D physical development

- 3.2.2 The Central Business District (CBD) is characterised by:

- A High building density
- B Low land value
- C Low concentration of commercial activity
- D Low degree of accessibility

- 3.2.3 The transition zone has ... and is characterised by ...

- (i) mostly high-order functions
- (ii) mixed-land use
- (iii) invasion and succession.
- (iv) commercial centralisation.

- A (i) and (iii)
- B (ii) and (iii)
- C (i) and (iv)
- D (ii) and (iv)

- 3.2.4 ... is a factor that determines the location of a heavy industrial land-use zone.

- A The proximity to the greenbelt to improve air quality
- B The expensive land on the outskirts
- C Functional prestige being close to residential areas
- D Located close access to bulk transport facilities

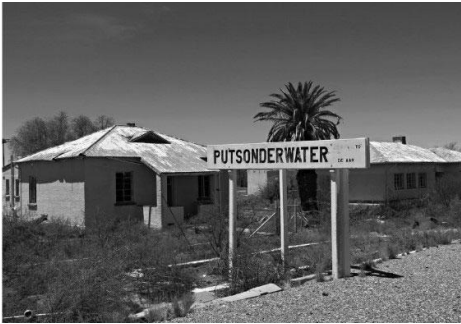



3.2.5 Urban sprawl causes a physical change in the ... land-use zone.

- A rural-urban fringe
- B greenbelt
- C industrial
- D CBD

(5 x 1) (5)

3.3 Refer to the photographs and extract on the rural decline of Putsonderwater.

<b>ABANDONED BUILDINGS IN PUTSONDERWATER</b>	
	
<b>RAILWAY STATION</b>	<b>GENERAL DEALER (SHOP)</b>
<b>RURAL DEPOPULATION IN PUTSONDERWATER</b>	
<p>Putsonderwater, a once-thriving little rural railway town in the Northern Cape has experienced significant rural decline and depopulation, resulting in rural decay and it being labelled a “ghost town”.</p> <p>The town’s decline began after the collapse of its primary industries, particularly agriculture and mining, which once supported its population. The migration of people resulted in a steady population decline which eventually led to the town being deserted.</p> <p>The once-bustling community is now characterised by abandoned buildings and it no longer functions as a local service centre but stands as a symbol of rural South Africa’s broader struggle with urbanisation and economic decline.</p> <p style="text-align: right; font-size: small;">[Adapted from <a href="https://karoospace.co.za/putsonderwater-station/">https://karoospace.co.za/putsonderwater-station/</a>]</p>	

3.3.1 What is *rural depopulation*? (1 x 2) (2)

3.3.2 Give evidence from the photographs that rural depopulation has taken place. (2 x 1) (2)

3.3.3 According to the extract, name the factor that initially contributed to rural depopulation in Putsonderwater. (1 x 1) (1)

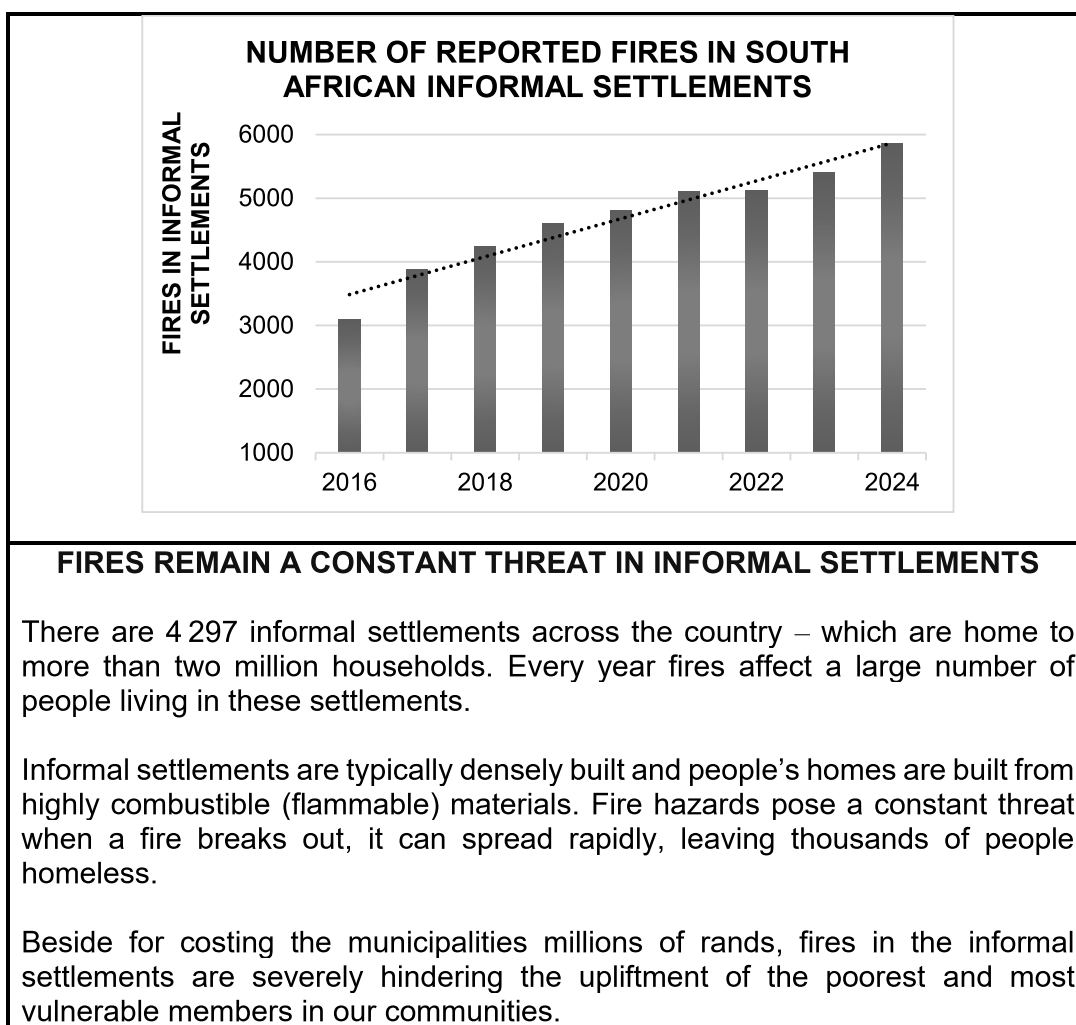
3.3.4 What are the economic consequences for rural areas when basic amenities such as the general dealer (shop) close? (2 x 2) (4)

3.3.5 Explain the negative social impact of rural depopulation on rural settlements. (3 x 2) (6)





3.4 Refer to the graph and extract on informal settlements as an urban issue.



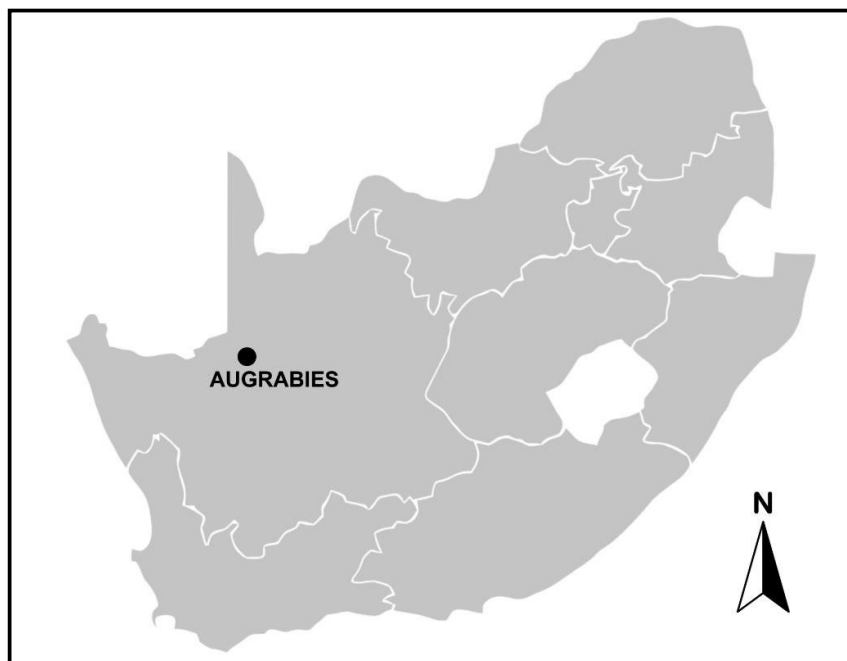
[Adapted from: www.researchgate.net]

- 3.4.1 According to the graph, state the trend of the number of fires in informal settlements from 2016 to 2024. (1 x 1) (1)
- 3.4.2 Give TWO reasons from the extract, why fires spread quickly through informal settlements. (2 x 1) (2)
- 3.4.3 How does a lack of proper infrastructure hinder emergency services from reaching informal settlements during a fire? (2 x 2) (4)
- 3.4.4 In a paragraph of approximately EIGHT lines, suggest measures that local municipalities can put in place to reduce the challenges associated with fires in informal settlements. (4 x 2) (8)

**[60]**

**TOTAL SECTION A: 120**



**SECTION B****QUESTION 4: GEOGRAPHICAL SKILLS AND TECHNIQUES****GENERAL INFORMATION ON AUGRABIES**

**Coordinates: 28°35'S; 20°20'E**

Augrabies is a small town in the Northern Cape province of South Africa, situated on the south bank of the Orange River about 100 kilometres downstream from Upington. Augrabies is renowned for the impressive Augrabies Falls within the Augrabies Falls National Park. The falls, where the Orange River plunges 56 meters into a gorge, attracts both local and international tourists. Agriculture also plays a role in the economy, with grape farming and citrus production being notable in the broader region, supported by irrigation from the Orange River. The climate is arid; characterised by hot summers and mild winters, with little rainfall throughout the year, making it a semi-desert environment.

[Adapted from [https://en.wikipedia.org/wiki/Augrabies,\\_South\\_Africa](https://en.wikipedia.org/wiki/Augrabies,_South_Africa)]

The following English terms and their translations are shown on the topographic map:

**ENGLISH**

Canal  
Diggings  
Furrow  
Waterfall

**AFRIKAANS**

Kanaal  
Uitgrawings  
Voor  
Waterval

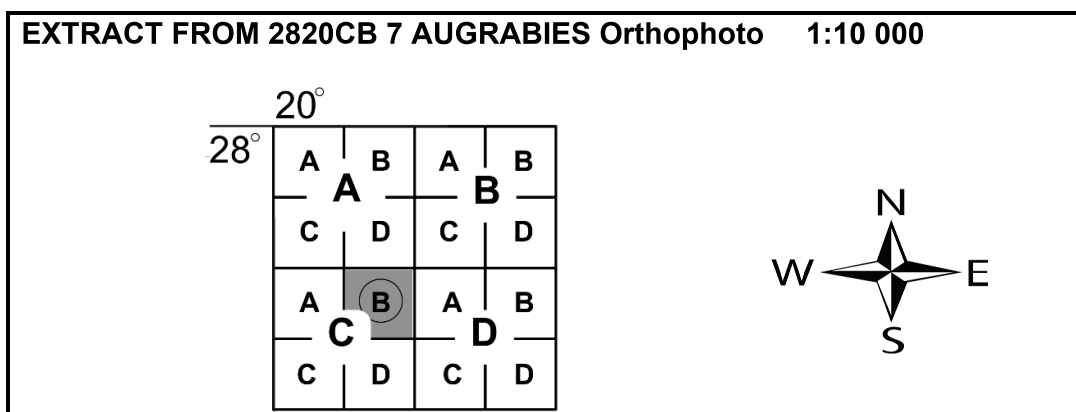


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## 4.1 MAPWORK SKILLS AND CALCULATIONS

Refer to the reference grid and information about the orthophoto map.  
Four options are given for the questions below. Choose the answer and write only the letter (A–D) next to the question numbers (4.1.1 to 4.1.3) in the ANSWER BOOK for example. 4.1.4 A.



4.1.1 The reference code of the map directly to the east:

- A 2820 DA
- B 2028 AD
- C 2820 AD
- D 2028 DA

(1)

4.1.2 The photo number for the map of AUGRABIES:

- A 28
- B 20
- C 7
- D 10 000

(1)

4.1.3 The map with a scale of 1 : 10 000 shows a ... area with ... detail compared to the map with a 1 : 50 000 scale.

- (i) smaller
- (ii) larger
- (iii) greater
- (iv) less

(1)

- A (i) and (iv)
- B (i) and (iii)
- C (ii) and (iv)
- D (ii) and (iv)



4.1.4 Refer to the orthophoto map.

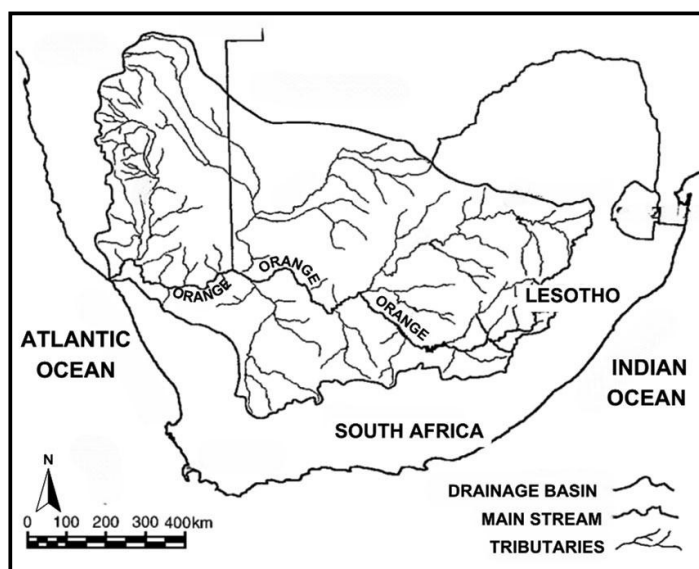
- (a) Calculate the distance (HE) in metres (m) from **1** (block **D3**) to **2** (block **C2**) if the distance is 7.8 cm on the map. (1 x 1) (1)
- (b) Determine the difference in height (VI) between **1** (block **D3**) and **2** (block **C2**). (2 x 1) (2)
- (c) Calculate the average gradient from **1** (block **D3**) to **2** (block **C2**). (2 x 1) (2)

$$\text{Formula: Average Gradient} = \frac{\text{vertical interval (VI)}}{\text{horizontal equivalent (HE)}}$$

- (d) Explain how the gradient (answer to QUESTION 4.1.4 (c)) favoured the development of the holiday resort. (1 x 2) (2)

## 4.2 MAP INTERPRETATION

Refer to the map below that shows the Orange River's drainage basin to answer QUESTIONS 4.2.1 and 4.2.2.



[Adapted from <https://www.researchgate.net/figure/Orange-River-basin-Source>]

- 4.2.1 The Orange River is classified as an (exotic / episodic) river type. (1 x 1) (1)
- 4.2.2 Give a reason for your answer to QUESTION 4.2.1. (1 x 2) (2)

Refer to the topographical map.

- 4.2.3 Why will there be intervisibility between spot height 844 (block **A5**) and spot height 824 (block **A5**)? (1 x 1) (1)



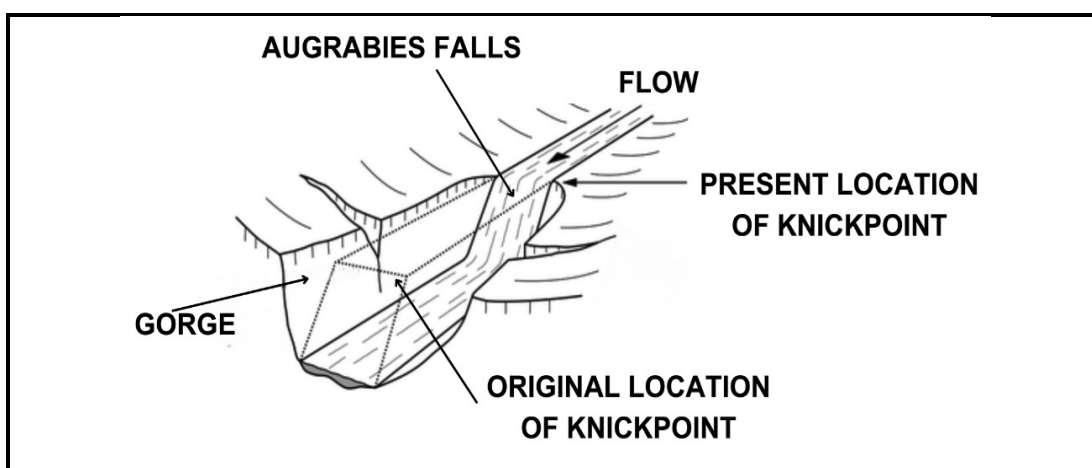
- 4.2.4 How does the katabatic wind form on the south-east facing slope of the ridge (**F**) in block **A5**? (2 x 1) (2)

Refer to rural settlement (**G**) in block **B4**.

- 4.2.5 The settlement pattern (**G**) is classified as (dispersed / nucleated). (1 x 1) (1)

- 4.2.6 State ONE social disadvantage of the settlement pattern (answer to QUESTION 4.2.5) (1 x 1) (1)

The Orange River flows over the edge of the Augrabies Falls (block **A1** on the topographical map and block **C3** on the orthophoto map). Refer to the maps and the sketch below to answer QUESTION 4.2.7.

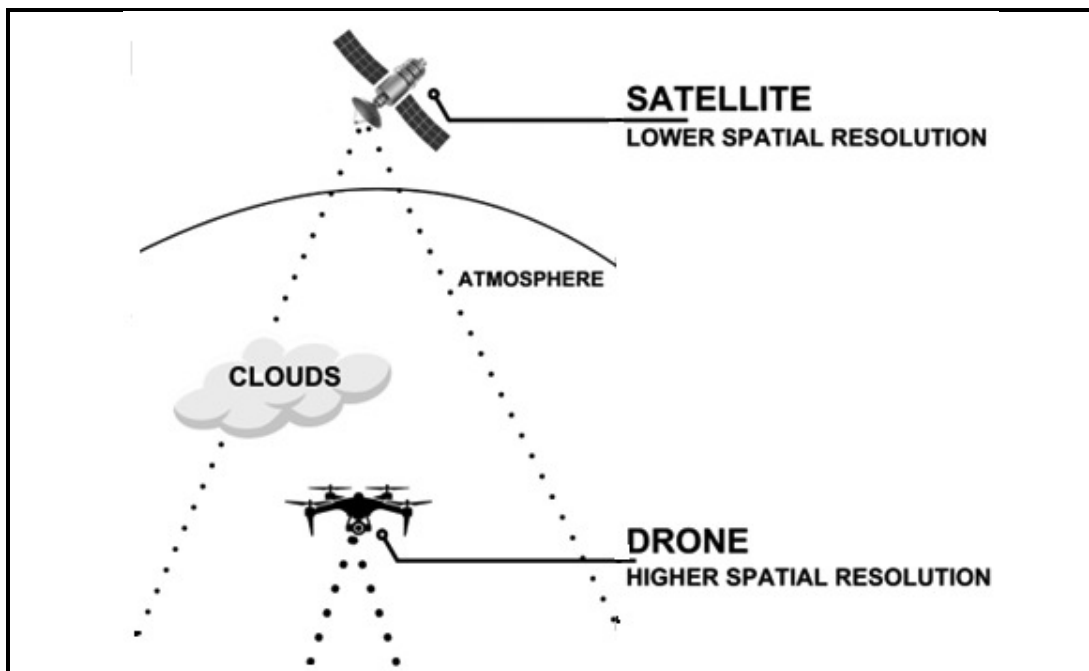


[Adapted from <https://link.springer.com/chapter/10>]

- 4.2.7 (a) (Upstream / Downstream) erosion is evident. (1 x 1) (1)
- (b) How can erosion impact the shape of the gorge at Augrabies Falls? (1 x 2) (2)
- (c) What is the economic significance of Augrabies Falls for the local community? (1 x 1) (1)

### 4.3 GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

Refer to the sketch below to answer QUESTIONS 4.3.1 to 4.3.3.



[Source: Examiner's own sketch]

- 4.3.1 What is *remote sensing*? (1 x 2) (2)
- 4.3.2 Satellites and drones capture data in (raster/vector) format. (1 x 1) (1)
- 4.3.3 Name TWO advantages of using a drone instead of a satellite to map rock formations over Augrabies Falls. (2 x 1) (2)

Refer to block **B2** on the topographical map.

- 4.3.4 Provide evidence that buffering is taking place in block **B2**. (1 x 1) (1)
- 4.3.5 Why is buffering important along the Orange River in block **B2**? (1 x 2) (2)

[30]

**TOTAL SECTION B: 30**  
**GRAND TOTAL: 150**

